Patent
Attorney's Docket No. <u>040071-173</u>

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of)
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Johan NILLSON) Group Art Unit: 2133
)
Application No.: 09/598,210) Examiner: MOORE, William P.
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Filed: June 21, 2000) Confirmation No.: 8106
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For: BIT ERROR RATE ESTIMATION)
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RESPONSE TO OFFICE ACTION
       Technology Center 2100

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

This is a complete response to the Office Action mailed on December 27, 2002.

Claims 1-18 remain pending in the application. Favorable reconsideration is respectfully

requested in view of the following remarks.

The indication that claims 8, 9, 17, and 18 define patentable subject matter is noted

with appreciation.

As an initial matter, it is noted that the Office Action Summary indicates that the

Information Disclosure Statement (Paper Number 2) was supplied as an attachment to the

Office Action. However, the indicated attachment did not, in fact, accompany the Office

Action. Therefore, it is requested that an Examiner-initialed copy of the Information

Disclosure Statement be provided to the Applicant with the next mailing from the Office.

Claims 1, 2, 5, 6, 10, 11, 14, and 15 were rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Abe et al. [sic: Abe -- there do not appear to be any co-inventors listed in this document] (EPO 0,600,095 A1). This rejection is respectfully traversed.

The invention relates to techniques for estimating a Bit Error Rate (BER) associated with received data. As explained in the Background section of the application, error correction coding is usually applied to information that is to be transmitted so that errors in the received data may be corrected. However, error correction coding is not infallible -- decoded bits do occasionally contain errors.

This can be problematic for estimating the BER because conventional techniques utilize a process whereby decoded bits are re-encoded and then compared with the originally received encoded bits. Observed differences between these two are taken to indicate bit errors that had been corrected in the decoding process. Statistics utilizing the number of these bit errors are used to generate the BER. This is an accurate measure of the number of bit errors when all of the bit errors are correctable. However, if the decoded bits include one or more bit errors, the resultant BER estimate can be grossly over- or under-estimated for the reasons more fully explained on page 5 of the application. This can result in catastrophically inappropriate responsive power control measures being taken in a communication system.

This problem is addressed by the invention. Claim 1 defines a method of generating a bit error rate estimate for a received signal, which method comprises using an error correction decoding technique to generate a block of decoded bits from the received signal,

and using an error detection technique to determine whether at least one of the decoded bits from the block of decoded bits has an erroneous value. If none of the decoded bits from the block of decoded bits has an erroneous value, then the bit error rate estimate is calculated from the received signal. However, if at least one of the decoded bits from the block of decoded bits has an erroneous value, then the bit error rate estimate is set equal to a value that is based on a previously calculated bit error rate. In this way, the bit error rate estimate can more accurately reflect real conditions on the channel.

Independent claim 10 similarly defines an apparatus for generating a bit error rate estimate for a received signal, which apparatus includes logic that sets the bit error rate estimate equal to a value that is based on a previously calculated bit error rate if at least one of the decoded bits from the block of decoded bits has an erroneous value.

It is well established that a claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference. The Abe document fails to anticipate independent claims 1 and 10 at least because it neither discloses nor suggests setting a bit error rate estimate equal to a value that is based on a *previously calculated* bit error rate if at least one of the decoded bits from the block of decoded bits has an erroneous value.

The Office relies on Abe at column 3, lines 53-56 as showing this feature. This reliance is unfounded because Abe's preset value does not appear to be calculated at any time. Instead, Abe discloses a system in which the preset value is merely *selected*, and appears to be static. For example, see Abe at column 14, lines 3-8: "With EDF=0, the input decoded signal s21a is outputted intactly (step 503), while with EDF=1, there are

outputted the number of errors and the bit error rate, *which have been preset to between 0 and 50%*, respectively (step 504)." (Emphasis added.) The Abe document provides no guidance with respect to how one is to select a suitable preset value. It is certainly not inherent in Abe that the selection of the particular preset value is based on any calculation -- the designer could, for example, simply pick a static value that he or she considers to be suitable in general, without any consideration for the actual channel conditions being encountered. Thus, there is no support for a rejection based on anticipation. Nor can an obviousness rejection be supported in this instance because no prior art has been applied that could provide not only the missing feature (i.e., a previously *calculated* value to be used as the bit error rate estimate) but also the motivation necessary for modifying Abe to match the embodiments defined by the rejected claims. Without any such prior art, the Office can rely only on Applicant's own disclosure in an impermissible hindsight analysis.

For at least the foregoing reasons, independent claims 1 and 10, as well as the claims 2, 5, 6, 11, 14, and 15 which variously depend therefrom, are believed to be patentably distinguishable over the prior art of record. Therefore, it is respectfully requested that the rejection of these claims under Section 102 be withdrawn.

Claims 3, 4, 12, and 13 were rejected under 35 U.S.C. § 103(a) as allegedly being unpatentable over Abe. This rejection is respectfully traversed.

As explained in MPEP § 2143, to establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a

reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The MPEP further reminds that the teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, not in applicant's disclosure.

Claims 3, 4, 12, and 13 variously depend from independent claims 1 and 10, and therefore incorporate all of the features of these base claims. The Office has failed to set forth a *prima facie* case of obviousness with respect to these claims at least because the Abe document neither discloses nor suggests setting a bit error rate estimate equal to a value that is based on a *previously calculated* bit error rate if at least one of the decoded bits from the block of decoded bits has an erroneous value. The Abe document further fails to disclose the features specifically recited in claims 3, 4, 12, and 13.

Furthermore, the Office has failed to show how the prior art provides the motivation necessary for modifying Abe to match the embodiments defined by the rejected claims.

For at least the foregoing reasons, claims 3, 4, 12, and 13 are patentably distinguishable over the Abe document. It is therefore respectfully requested that the rejection of these claims under Section 103 be withdrawn.

Claims 7 and 16 were rejected under 35 USC § 103(a) as allegedly being unpatentable over Abe in view of Paik et al. (U.S. Patent 5,241,563) in view of Wicker ("Error Control Systems for Digital Communication and Storage", Prentice-Hall, 1995). This rejection is respectfully traversed.

Claims 7, and 16 variously depend from claims 1 and 10, and therefore incorporate all of the features of these base claims. The Office has failed to set forth a *prima facie* case

of obviousness with respect to these claims at least because the Abe document neither

discloses nor suggests setting a bit error rate estimate equal to a value that is based on a

previously calculated bit error rate if at least one of the decoded bits from the block of

decoded bits has an erroneous value, and because neither of the Paik et al. and Wicker
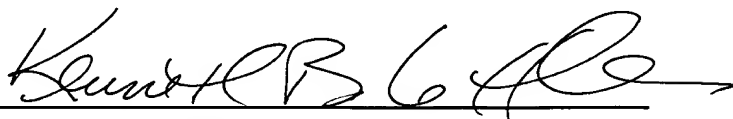
documents makes up for this deficiency.

Furthermore, the Office has failed to show how the *prior art* provides the

motivation necessary for modifying the combination of Abe, Paik et al. and Wicker to

provide the missing feature identified above.

For at least the foregoing reasons, claims 7 and 16 are patentably distinguishable

over the Abe, Paik et al. and Wicker documents, whether considered individually or in

combination. It is therefore respectfully requested that the rejection of these claims under

Section 103 be withdrawn.

The application is believed to be in condition for allowance. Prompt notice of same

is earnestly solicited.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: _____
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Date: February 4, 2003

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Application No.: 09/598,210) Examiner: MOORE, William P.
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AMENDMENT/REPLY TRANSMITTAL LETTER

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Technology Center 2100

Assistant Commissioner for Patents
Washington, D.C. 20231

Sir:

Enclosed is a reply for the above-identified patent application.

[ ] A Petition for Extension of Time is also enclosed.

[ ] A Terminal Disclaimer and a check for [ ] $55.00 (2814) [ ] $110.00 (1814) to cover the requisite Government fee are also enclosed.

[ ] Also enclosed is _____ .

[ ] Small entity status is hereby claimed.

[ ] Applicant(s) request continued examination under 37 C.F.R. § 1.114 and enclose the [ ] $375.00 (2801) [ ] $750.00 (1801) fee due under 37 C.F.R. § 1.17(e).

    [ ] Applicant(s) previously submitted ___, on ___, for which continued examination is requested.

[ ] Applicant(s) request suspension of action by the Office until at least _, which does not exceed three months from the filing of this RCE, in accordance with 37 C.F.R. § 1.103(c). The required fee under 37 C.F.R. § 1.17(i) is enclosed.

[ ] A Request for Entry and Consideration of Submission under 37 C.F.R. § 1.129(a) (146/246) is also enclosed.

[X] No additional claim fee is required.

[ ] An additional claim fee is required, and is calculated as shown below:

(10/02)

AMENDED CLAIMS					
	No. Of Claims	Highest No. Of Claims Previously Paid For	Extra Claims	Rate	Addt'l Fee
Total Claims		MINUS =		× $18.00 (1202) =	
Independent Claims		MINUS =		× $84.00 (1201) =	
If Amendment adds multiple dependent claims, add $280.00 (1203)					
Total Amendment Fee					
If small entity status is claimed, subtract 50% of Total Amendment Fee					
TOTAL ADDITIONAL FEE DUE FOR THIS AMENDMENT					

[ ] A claim fee in the amount of $_____ is enclosed.

[ ] Charge $_____ to Deposit Account No. 02-4800.

The Commissioner is hereby authorized to charge any appropriate fees under 37 C.F.R.

§§ 1.16, 1.17, 1.20(d) and 1.21 that may be required by this paper, and to credit any overpayment, to Deposit Account No. 02-4800. This paper is submitted in duplicate.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

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(10/02)